

Patriot®

Braking System

Owner's Manual



Patent Pending
BRK2012

THANK YOU

for purchasing a Patriot® braking system from Blue Ox®. We've organized this manual to make your installation simple and as trouble-free as possible. Please read before operating the brake. Keep your sales receipt and this manual in a safe place so that both are available for future use if needed.

Read and understand fully these instructions prior to the use of this product.

A new level of braking confidence.

Blue Ox®

Two-Year Limited

Automatic Equipment Manufacturing Company ("Automatic") warrants to the original (first) retail purchaser this product manufactured by Automatic, shall be free from defect in material and workmanship under normal use and service for a period of two (2) years from the date of delivery. During said period, Automatic will repair or replace any parts that have been returned by the original purchaser, to the factory, transportation prepaid, and in Automatic's sole and absolute opinion found to be defective.

Limitations on Warranty Coverage:

Coverage under this warranty will be valid only if the customer warranty card is returned by the original purchaser within 30 days of purchase.

Coverage under this warranty will be effective only when a copy of the original invoice, showing date and place of purchase, accompanies any claim for warranty. This warranty is NON TRANSFERABLE.

This limited warranty will not cover, in any way or form, any alleged damages caused by incorrect or improper installation, improper use, modification or neglect of product, failure to properly service and maintain, misuse, act of God, accident or failure of the user to follow guidelines contained in the instructional material provided by Automatic.

This warranty does not cover normal wear and tear, paint or rust.

Warrantor assumes no responsibility to the owner for loss of use of product, loss of time, inconvenience or any other damage consequential or otherwise. Including, but not limited to mileage, expense of transporting of product, return shipping expense, mechanics travel time, telephone, road service, towing, and rental during repairs, travel, lodging, loss or damage to personal property or loss of earnings.

REPAIR OR REPLACEMENT AS SET FORTH IN THIS LIMITED WARRANTY IS THE SOLE EXCLUSIVE REMEDY OF THE PURCHASER. AUTOMATIC SHALL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES FOR BREACH OF ANY EXPRESS OR IMPLIED WARRANTY ON THIS PRODUCT. EXCEPT TO THE EXTENT PROHIBITED BY APPLICABLE LAW, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE ON THIS PRODUCT IS LIMITED IN LENGTH TO THE DURATION OF THIS WARRANTY.

Some states do **NOT** allow the exclusion of incidental or consequential damages, or allow limitations on how long an implied warranty lasts, so previous limitations or exclusions may **NOT** apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

Automatic reserves the right to make changes or add improvements to its product at any time without any obligation to make such changes to previously manufactured equipment.

No liability is assumed for bodily injury that may be inflicted on the purchaser, operator, spectator or general public who is in the general area while this equipment is in use.

WARRANTY REQUEST PROCEDURE:

If your Automatic product develops a defect during the warranty period, promptly notify Automatic Customer Care. Until such notice is received, Automatic will not be responsible for any repairs or replacement.

Upon receipt of notice from you, Automatic will have a choice of options in repairing or replacing any part it determines in its sole and absolute discretion to be defective. 1.) Customer Care may require you, at your own expense, to deliver or ship the part to the factory for evaluation. They will issue a "Return Merchandise Authorization" (RMA) number if this is required. 2.) Any part that is, in Automatic's sole and absolute judgment, found to be defective in material or workmanship, will be repaired or replaced, at Automatic's option without charge for parts or labor. At Automatic's option, new, refurbished or improved parts may be used in the repair or replacement of warranted items or replacement products.

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Product Information & Table of Contents

Equipment Information Record

Customer Name: _____
Date Purchased: _____
Purchased From: _____
Address: _____
City: _____ State: _____ Zip Code: _____
Phone Number of Dealership: _____
Installed By: _____
Service #: _____
Model #: _____
Serial #: _____
Notes: _____



-FOR YOUR SAFETY-

Fully understand these instructions before installing. Improper installation and/or operation can create a hazard which can cause serious injury, property damage or death. Improper installation and/or operation will void the warranty.

At Blue Ox® we pride ourselves in offering exceptional customer service to our valued customers.

If you have any questions, comments, or concerns please feel free to contact a member of our Customer Care Team by calling (402) 385-3051.

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DEALERS AND DISTRIBUTORS:

PLEASE give the instructions to the customer so they fully understand the set-up, operation, and safety precautions of this braking system.

Welcome to the Blue Ox® Experience

Congratulations! You are now the proud owner of a Patriot® braking system.

Welcome to the Blue Ox® Family. The braking system that you have purchased combines quality components with the latest in technology and style. We are confident that these design features will provide you with the conveniences you expect during your travels. After you understand how to properly and safely operate and care for your Patriot®, expect years of trouble-free operation and service backed by a two year limited warranty.

In this manual, you will find installation instructions. Please read all of the technical documents, warnings, cautions, tips, and notes in this manual before attempting to operate your Patriot® for the first time. Improper installation, use or maintenance may result in malfunction causing personal injury or property damage. Finally, don't forget to fill out and return your warranty card or registering via our web site at www.blueox.com within ten days of delivery date and upon the original serial number being visible on the product and unaltered. For future reference, your serial number is located on the outside of the manual packaging and is also located on the bottom of your Patriot® unit.



Care & Maintenance

Care and Maintenance of your Patriot® Braking System

Your Patriot® unit requires a minimal amount of care and maintenance. If you do not feel confident in your ability to perform the occasional maintenance, consult your Blue Ox® Dealer or Professional Installer, or see a Blue Ox representative at a rally or race that you plan to attend. The following will inform you of the areas of your Patriot® that will need periodic inspection and/or care and maintenance.



Care

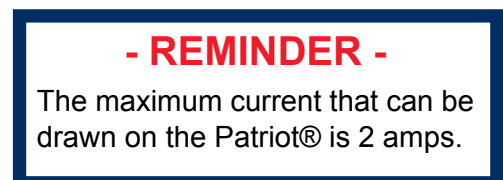
Do **NOT** use any type of solvent or spray cleaner on the Patriot® braking system. The recommended cleaning procedures for the Patriot® are to wipe down the exterior with a damp cloth. Wipe down with a dry cloth.

Store in a clean, dry place.

Maintenance

It may be necessary to occasionally lubricate the brake bracket with silicone spray.

New units need approximately 8 hours of charge time over a 3 month period. The car does not need to be on during this time. Also, the unit can be left plugged in for any period of time without causing damage.



Unpacking your Patriot®

Remove the Patriot® and accessories from the shipping carton, review parts list and diagram below. Make sure that you have the appropriate items shown below. If **NOT**, please contact a Blue Ox® Dealer or Distributor, or call a member of the Customer Care Team at (402) 385-3051 to order replacement parts.

Patriot® Braking System

The Patriot® brake system is comprised of the Patriot® (with brake bracket assembly).

Patriot®



Breakaway System



Contents:

- 1 Patriot® assembly
- 2 2-Way RF In-Coach Controller
- 3 Brake Feet

- 4 Breakaway Switch
- 5 Breakaway Lanyard
- 6 Breakaway Cable

Tools & Supplies Required

Phillips Screwdriver
Wire Ties
Vise Grip
Rubber Grommet
Silicone Sealant

! WARNING

Be sure the breakaway cable is kept clear of the towbar, safety cables, electrical cord or any moving parts.

The Patriot® Illustrated



Installation Set-Up

This section will explain how to install the Patriot®.

Note: Prepare the car for towing. Attach the tow bar.

In Towed Vehicle

1. Open driver side door of towed vehicle and push driver seat back as far as possible.
2. Place BRK2012 Patriot® on the floor.
3. Open "Claw" and place it on the brake pedal. (Fig.1)



Fig. 1 Place claw on brake pedal

Note: The easiest way is to place the bottom of the claw under the pedal first, then slide the top of the claw over the top of the pedal. The top of the claw has silver knobs.

If towing a VW or Ford truck there are optional brake claws available. Please reference the accessories information in the back of this manual.

4. The feet can be attached for proper height position.

Note: Do not store or transport with the feet attached to the unit.
5. Slide the driver's seat forward to touch push pads. Adjust the push-pad up or down for proper height position in relation to the seat.

Note: Seat must be as far forward as possible without causing the brake lights to be activated. If the seat can't be moved forward far enough, an arm extension is available.

Note: If using a breakaway, it must be connected before turning on the unit.

6. Plug in power cord to cigarette lighter. Be sure there is 12 volt power. Indicator light will glow.
7. Turn on the power switch. (Fig. 2) Display will read initializing.



Fig. 2 Turn on Power Switch

8. Push the "SET-UP" button. (Fig. 3)

The brake will stroke three (3) times then remain in the ready position.

Note: If the brake extends fully and remains extended without stroking three times, the seat is not far enough forward. Turn the brake off then back on. Reposition the seat as far forward as possible without causing the brake lights to be activated then restart set-up process. A brake rod extension can be purchased separately. Please reference the accessories listed at the back of the manual for additional information.



Fig. 3 Push the Set-Up Button



Fig. 5 RF in-coach controller mounted on dashboard

In the Motor Coach

Find a sturdy, easy-to-reach location to mount the RF in-coach controller. The dashboard is the suggested mounting point, but anywhere that is secure and accessible to the driver will work.

Attaching the controller

Using the Velcro provided, attach one side to the desired mounting point, and the other side to the controller.

Note: The Patriot® Brake can be used with or without the RF controller. We recommend using the controller for the operational feedback, but the brake can be set without the RF controller.

BRK2012 Patriot®

Operating Instructions

1. Plug the 2-Way RF In-Coach Controller into an available 12 volt outlet.

If your remote is not receiving a signal or to pair a new or unpaired remote module, perform the following steps:

On the Remote

First, make sure the brake unit is plugged in and turned on. Hold down the "Manual Override" lever while plugging in the remote cord. Once the unit begins to light up, you can release the lever. An "A" will appear on the Remote LED screen indicating the unit is in "Search Mode". Once the remote changes from an "A" on the LED to another character the remote is now paired and will remain so until this procedure is repeated.

On the Brake Unit

Turn power to the brake unit off. Make sure the remote unit is plugged in. Firmly depress

2. The large number on the display represents the sensitivity setting of the Patriot® Brake; it will automatically be set to 5 when activated.
 3. Turn the "Gain" knob to the left or right to adjust this setting. The lowest setting (0) puts the tow brake on stand-by and will apply no pressure to the brake. Settings 1 through 9 will incrementally increase the pressure applied.
 4. On the bottom of the RF Controller there is a Manual Override Lever. Pressing down on this lever will cause the Patriot® Brake to press down on the brake pedal.
- Note: This is a progressive lever; the lever controls the braking according to the level set on the RF controller. This acts like a trailer brake and is useful in wet weather to keep the towed vehicle in line.
5. If the error light turns on, Check the display screen on the Patriot® Brake unit and refer to the list of possible display messages for assistance (see Fig. 6). After addressing the problem, turn off the Patriot® Brake and restart the set-up procedure.
 6. If a breakaway switch is installed and plugged in, the "BK / AWAY ON" LED should be on. Follow the instructions provided. The break-away switch should be installed and plugged in before turning the brake on.
 7. Anytime the towed vehicle is started up, the Patriot needs to be reset.
 8. Go through the set-up procedure again if the unit is shut off for any period of time and left in the toad or if the battery goes dead.

the JOG switch to the left AND simultaneously hold down the SET-UP button while powering on the unit. Once the unit begins to light up you can release the buttons. The screen should read "Remote Search" and will only accept radio communication from the energized remote device. Once it finds the remote, it will automatically reset, and come up in normal operation mode.

Each step should take approximately 10 seconds. Once a set is paired, go through the normal set-up and make sure everything is functioning (make sure the Gain knob on the remote changes the gain displayed on the remote itself and also on the brake, and make sure that the Manual Override actually applies the brakes).

When installing the Patriot® on hybrids, the settings menu must be accessed. To do this:

1. Hold down the set-up button while turning the unit on, when it lights up let go of the button.
2. Once it is finished initializing, the screen will read "MODE: FORCE". Hit the JOG switch to the left so that the screen now reads "MODE: POSITION". Press SET-UP to select this setting.
3. The next screen will read, "MAX FORCE" Press SET-UP again at this screen.
4. The brake should read "SETTINGS SAVED!" and automatically restart.

These setting will be stored in the memory and remain until a user goes through this procedure again and changes them.

In a Hybrid vehicle, the GAIN setting should always be kept between settings 1 and 3.

This will address the issue of users repeatedly getting REPOSITION BRAKE error during set-up. If a user gets the REPOSITION BRAKE error twice in a row while trying to set-up their brake, then they should do the following:

1. With the brake plugged in but powered off, hold down the SET-UP button while powering on the unit. Once it lights up you can release the set-up button.
2. Once it is finished initializing, the screen will read "MODE: FORCE". Hit the JOG switch to the left so that the screen now reads "MODE: POSITION". Press SET-UP to select this setting.
3. The next screen will read, "MAX FORCE" Press SET-UP again at this screen.
4. The brake should read "SETTINGS SAVED!" and automatically restart.

These setting will be stored in the memory and remain until a user goes through this procedure again and changes them. With these settings, the brake will work on ANY vehicle. For a traditional vehicle, the GAIN setting should be kept between settings 6 and 9. In a Hybrid vehicle, the GAIN setting should be kept between settings 1 and 3.

Error messages DO show up on the brake itself and NOT on the RF remote inside the RV. You are notified of an error on the RF, but the error messages are displayed on the brake. In order for the breakaway switch to work properly, it must be plugged into the brake before you turn the brake on. The following chart has details of the error messages in the Patriot. Each error has a corresponding code number that will show up in the remote. Listed below are codes that will show up during normal operation.

LED Numeric Display Indication	Description
Non-flashing "0" through "9"	Control Unit in READY state (normal operation), indicates current braking gain setting.
Flashing "0" or "A"	Control Unit in RADIO SEARCH state (looking for Remote Unit radio transmission to store MAC address).
Flashing "1"	Control Unit in INITIALIZING state (retract actuator).
Flashing "2"	Control Unit in POSITION state (manual jog).
Flashing "3"	Control Unit in SETUP state (pump brake pedal 3 times).
Flashing "4", with intermittent beep	Control Unit in CAR BATTERY LOW state (retract actuator, no braking function except breakaway).
Flashing "5", with intermittent beep	Control Unit in UNIT NOT LEVEL state (not currently implemented).
Flashing "6", with intermittent beep	Control Unit in REPOSITION state.
Flashing "7", with intermittent beep	Control Unit in BREAKAWAY state (maximum braking applied).
Flashing "8", with intermittent beep	Control Unit in BRAKING TIMEOUT state (retract actuator, no braking function except breakaway).
Flashing C", with intermittent beep	Communications error (Remote Unit not receiving radio transmissions from Control Unit).

Blue Ox Patriot

Detailed Explanation of Error Codes

FLASHING 4 WITH INTERMITTENT BEEP - CONTROL UNIT IN CAR BATTERY LOW

What does this mean? The car battery low error comes on when the car voltage drops below 10V (unfiltered reading). This means that the brake has detected that the towed car's battery is **very low**. It may not be completely dead yet; however, it is probably close. The brake will go into an idle state and not work for normal braking. ***It will work in the event of a breakaway!***

It is highly recommend, but not mandatory, that you pull over and charge the towed vehicles car battery. Make sure to go through the set-up procedure again prior to resuming driving.

FLASHING 5 WITH INTERMITTENT BEEP - UNIT NOT LEVEL

What does this mean? Brake may be too far off level for the accelerometers to function properly. Adjust the feet on the brake in order to level the unit as much as possible.

FLASHING 6 WITH INTERMITTENT BEEP - CONTROL UNIT IN REPOSITION STATE

What does this mean? If the user gets the reposition brake error two (2) times in a row while trying to set-up the brake, the following should be done:

- With the brake plugged in, but powered off, hold down the SET-UP button while powering on the unit. Once it lights up you can release the set-up button.
- Once it is finished initializing, the screen will read "MODE: FORCE". Hit the JOG switch to the left so the screen reads "MODE: POSITION". Press SET-UP to select this setting.
- The next screen will read "MAX FORCE". Press SET-UP again at this screen.
- The brake should read "SETTINGS SAVED!" and automatically restart.

These settings will be stored in memory and remain until the user goes through this procedure again and changes them.

FLASHING 7 WITH INTERMITTENT BEEP - CONTROL UNIT IN BREAKAWAY STATE

What does this mean? Either the car actually did breakaway or the breakaway pin was pulled out and the brake is being fully applied. Pull over, secure the car, reset the brake, go through the set-up again and then continue driving.

FLASHING 8 WITH INTERMITTENT BEEP - CONTROL UNIT IN BRAKING TIMEOUT STATE

What does this mean? After the brake has been applied for a long duration of time, whether it is due to actual braking or if you hold down the "manual brake lever", the brake will automatically retract itself and it will give this error code. This is to prevent possible damage to the brakes of the towed vehicle. When this error occurs, the brake will go into an idle state.

It will not work for normal braking; however, ***it will work in the event of a breakaway!***

It is highly recommended that you pull over and check the towed vehicle. You will need to reset the brake and make sure to go through the SET-UP procedure again prior to driving.

FLASHING C WITH INTERMITTENT BEEP - COMMUNICATIONS ERROR

What does this mean? The 2 way RF in coach controller is no longer communicating with the Patriot® Brake. This may be due to the position of the controller, if the problem persists try repositioning it in the coach.

Breakaway System

Description of your product.

The Breakaway system automatically activates the Patriot® to apply the brakes on your towed vehicle in the event the motorhome separates from the towed vehicle. This type of emergency system is required by most states and provinces.

Installation

This section will explain how to install the breakaway.

Mounting the Break-Away Switch

1. With the pin facing the motor home, secure the break-away switch onto the front of the towed vehicle in a sturdy location. This should be a convenient location which can be easily reached, and if possible, on the driver's side.

Note: The break-away switch must be mounted directly on the towed vehicle and not to be installed on the tow bar or bracket. The surface must be strong enough to hold the break-away switch and allow for the pin to be pulled out cleanly.

2. Make certain that the switch is securely attached, and that the pin can be removed from the switch without any interference. Plug the cable into the break-away switch.
3. Install the Break-Away Switch using a bolt and lock nut. Do not use a self tapping screw.

Connecting the Break-Away Switch to the Patriot® Brake

There are two different ways to attach the break-away device to the Patriot® Brake. Use the method which is most convenient for you.

Method 1: Through the firewall

1. Look for a preexisting hole in the firewall, if no hole exists, drill a 1/2" diameter hole. Insert grommet into hole.

Note: Make sure not to damage any components on either side of the firewall while drilling.

2. Find a path for the cable through the engine compartment to the firewall. Use wire ties to secure the cable. Make sure to avoid any hot or moving engine parts.
3. Insert the cable into the grommet and pull the excess slack into the driver's compartment. Seal around and inside of the grommet with silicone sealant.
4. Plug the cable into the Patriot® Brake.

Note: When not in use, the cable can be tucked away .

Method 2: Feeding the cable through the door/window

1. Find a path for the cable through the engine compartment to the rear of the hood/base of the windshield, on the driver's side. Use nylon ties to secure the cable so that it is avoiding any hot or moving engine parts.
2. Either roll down the window and thread the cable through, or open the door and thread the cable through. Make sure excess slack is safely coiled inside the driver's cockpit. Once the cable is through and connected, close the door/window.

Disconnecting

This section will provide disconnecting information about the Patriot®.

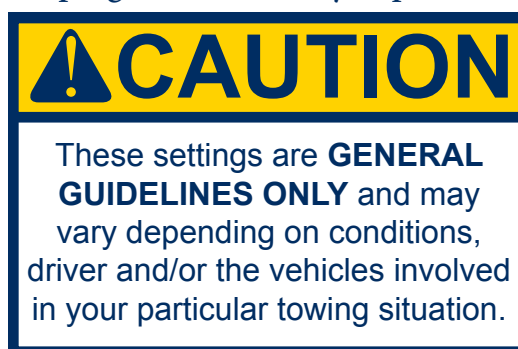
Perform these steps each time you remove the Patriot®.

1. Turn off the Patriot. Unplug the Patriot® power cord from the 12-volt accessory outlet.
2. Adjust the driver's seat as far back as possible.
3. Unhook the brake bracket from the brake pedal. Unplug the Breakaway clips from the Patriot® control panel (if applicable).
4. Lift the Patriot® out of the vehicle.



To satisfy FCC RF exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended.

The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help

Patriot® Accessories

If you would like to order any of these accessory parts for your Patriot®, please contact a Blue Ox® Dealer or Distributor, or call a member of the Customer Care Team at (402) 385-3051 to order these parts.

VW Brake Claw



This 3-1/2" brake claw is designed to be used with the Patriot® primarily when it is installed in a Volkswagen where the top section of the claw does not fit around the support holding the brake pedal. The part number is **BRK2501**.

Brake Rod Extension



If the seat can't be moved forward far enough, the brake rod extension is available to be inserted between the brake claw and the actuator arm. Also, if there is a low steering column/dashboard which touches and interferes with the brake, this extension can be used. The part number is **BRK2502**.

Seat Stiffener



The seat stiffener works with any drop in tow brake on the market. It provides a larger surface area on the seat for the brake system to push against. This means you get better, more responsive braking. If you continually get a "reposition brake error" this will help solve that problem. The part number is **BRK2503**.

Ford Truck Brake Claw



This 4" brake claw is designed to be used with the Patriot® primarily when it is installed in a Ford truck where the top section of the claw does not fit around the support holding the brake pedal. The part number is **BRK2504**.

Breakaway Switch



There is one (1) breakaway switch included with your Patriot®. An additional switch for a second vehicle can be used. The part number is **BRK2505**.

Patriot® Protective Bag



In order to protect your Patriot® while not in use and to keep all accessories together, a protective bag is available. The part number is **BRK2506**.

Don't rely on overburdened brakes. Instead, rely on a complete braking system from the company synonymous with safe, reliable RVing. Blue Ox®.

To find the Blue Ox® dealer nearest you,
visit www.blueox.com or call (402) 385-3051.

Serial Number



Customer Service Commitment

Blue Ox® is focused on providing exemplary customer service, as observed in our mission statement and guiding principles. In accordance with this objective, Blue Ox® is proud to provide services such as repairs and general maintenance of Blue Ox® products at over 150 RV Rallies. Look for our Destination America or Blue Ox® service crews at the next rally or race that you attend.

Blue Ox® also offers educational seminars at rallies and through our Parks and Resort teams. In addition, Blue Ox® customers visiting our factory may take advantage of free use of the well-equipped Blue Ox® RV park at no charge to you, our valued and appreciated customer.

